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ABSTRACT

This study investigated possible sex differences in need for achievement (nAch) among 225 organizational employees as measured by a nonprojective questionnaire developed by Hermans (1970). Further, several hypotheses suggested by previous research were tested in an effort to explain sex differences in nAch. A significant difference between males and females was found, with females having the higher nAch mean. No support was found for the predictions that one's geographic background or the marital status of one's parents during childhood would affect nAch. It was found that subjects whose parents encouraged independence/achievement obtained a significantly higher mean nAch than subjects who received less parental encouragement in this area. The predicted nonlinear relationship between nAch and family responsibility, defined by examining categories based on the subject's age, number of dependents, and age of dependents, was found for females. Socioeconomic status showed a significant effect upon nAch for the total sample for males and a near significant effect for females. The means were in the predicted direction. (Author)

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Nonprojective Analysis of nAch Among Male and Female Workers

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Running head: Nonprojective nAch Analysis

Nonprojective Analysis of nAch Among Male and Female Workers

Research in the area of need for achievement (nAch) has moved from early laboratory studies (Ach, 1910; Lewin, 1926) to the use of projective measures such as the Thematic Apperception Test (TAT) (Morgan & Murray, 1935) Murray, 1938) and more recently to investigations by David C. McClelland and his associates using a modified version of the TAT while retaining the basic ideas presented by Murray (1938). Early in their research, McClelland, Atkinson, Clark, and Lowell (1953) found that males at the high school and college levels obtain higher nAch scores under arousal or achievement-oriented situations while female subjects at both levels do not. Males score higher when their TAT pictures contain male figures.

The reasons given to explain these sex differences are many and varied. Women are said to associate TAT pictures of males in offices with nAch (McClelland, et al., 1953); male figures themselves are powerful nAch elicitors (Veroff, Wilcox, & Atkinson, 1953); a two-way interaction between female preference for intellectural vs. traditional female role and sex of the picture found (French & Lesser, 1964); different body positions for TAT picture subjects of both sexes affect nAch scores (Alper & Greenberger, 1967); woman may vicariously satisfy nAch via male cues (Stein & Bailey, 1973); female nAch scores increase if "success" is related to social desirability (McClelland, 1958); women fail to respond to the masculine competitive model (O'Leary, 1974); girls having a strong female model; i.e., a divorced mother, will have increased nAch scores (Veroff, Atkinson, Feld, & Gurin, 1969); females are not rewarded for achievement behavior (Stein & Bailey, 1973); life cycle changes regarding family responsibilities may affect achievement behavior (Matthews, 1960;

Degler, 1967; Baruch, 1967); nAch differs for persons from different geographic areas (Veroff et al., 1960) and from different social classes (Rosen, 1956).

A partial explanation for the confusing array of findings appears to surround the psychometric problems associated with the TAT and other similar measures. Entwisle (1972) found range restriction among the female academic scores used as dependent variables, possibly lowering intercorrelations. Other problems include lack of internal consistency, test-retest reliability, low relationships to external criteria, little evidence of convergent validity and overemphasis on conspect reliability (Klinger, 1966; Heckhausen, 1967; McClelland, 1955; Krumboltz & Farquhar, 1957; Weinstein, 1969). In addition, Jensen (1959) found that one subject's response to a TAT picture is no basis for predicting responses to other cards; Atkinson (1958) cites low intercorrelations between the TAT and other methods of nAch assessment; TAT scores have proved susceptible to examiner and situational variables (Anastasi, 1961).

Given the poor psychometric record of the TAT, results from using such a technique can legitimately be called into question. In response to the weaknesses found when using projective techniques, Hermans (1970) developed a nonprojective questionnaire to measure nAch. This device has shown improved measurement properties and will be discussed in more detail later.

The purpose of this research was to reexamine several of the findings mentioned above via the nAch measure developed by Hermans (1970). The specific hypotheses are as follows:

1. Males are expected to show higher nAch than females.
2. Sex differences in nAch are related to the following conditions:
    a. Persons receiving independence/achievement type childrearing will receive higher nAch scores than those who did not.

b. Higher nAch is linearly related to social class level.

c. Persons from rural backgrounds and whose parents remained married will have higher nAch than those persons from an urban background and whose parents were divorced or separated.

d. Women whose family responsibilities are at a minimum, i.e., have fewer dependents or whose dependents are older, will show higher nAch scores than those whose family responsibilities are greater.

Method

Subjects

A total of 225 first-level supervisors and nonsupervisors of both sexes served as subjects. The subjects are distributed as follows: 57 male nonsupervisors, 52 male supervisors, 86 female nonsupervisory workers, and 30 female supervisors. The workers had been employed at least 6 months and their ages ranged from 19 to 65 with 88% falling between 21 and 50. The majority (77%) were married.

The data were gathered anonymously from the respondents over a 4-week period, and the response rate was approximately 70%.

Measures[1]

Biographical Data. A series of questions used by Arvey and Dunnette (1970) to secure biographical information plus additional questions constructed by the present researcher were employed to gather data in such areas as: age, marital status, family income, parents' education and occupations, geographical background, subject's educational background, etc.

Socioeconomic status. Based in part on research by Duncan (1961), each subject's responses to randomly positioned biographical items regarding income, father's education, mother's education, subject's education, income source, and

current type of housing were summed to create a measure of socioeconomic status (SES). Three SES groups, high (n = 31), low (n = 35), and middle (n = 123), were formed from this measure by classifying individuals in these categories if their scores fell one standard deviation above the mean of the summed responses, one standard deviation below the mean, or within one standard deviation of the mean in either direction, respectively.

Family responsibility. Based on responses to biographical items, a 10-category classification scheme was created which takes into account the age of the subject, number of dependents, and ages of those dependents:

Group	Subject's Age	No. of Dependents	Dependent's Age
1	Less than 30	0	--
2	30 to 40	0	--
3	Less than 30	0-2	Under 5
4	30 to 40	0-2	Under 5
5	Less than 30	3+	Under 5
6	30 to 40	3+	Under 5
7	30 to 40	0-2	Over 5
8	30 to 40	3+	Over 5
9	Over 40	Any	Over 5
10	Over 40	0	--

The analysis of this variable assumed that groups 3 through 6 have more family responsibility than the remaining groups.

Need achievement. Hermans' (1970) laboratory and classroom studies showed his measure to have superior psychometric properties compared to the TAT. More recently, in a study of subjects in a business setting (South, 1974), managers were found to differ significantly from business students on various aspects of

nAch. The students showed a reliability of .67 (KR - 20) and their total nAch means differed significantly (t = 2.64; p < .01) from corporation managers. The subjects' responses to the 29 nAch items in the current study were summed to form a total nAch score which showed a reliability of .80 (KR - 20).

Childrearing experiences. Based in part on a questionnaire developed by Ausubel (1952) in his research on parental attitudes and their effects on the child's personality, the instrument used for this study contains 52 Likert-type items, each containing five alternate responses ranging from one (strongly disagree) to five (strongly agree) and showed a reliability of .81 (KR - 20).

Ausubel's items are usually summed to form subscales related to various childrearing styles. For this study, the independence/achievement scale was formed by summing responses to the appropriate items.

Results

To test the first hypothesis predicting higher nAch scores for males, a three-way ANCOVA was used to examine the main effects of sex, job level, and organization as well as possible interactions. Table 1 contains the ANCOVA summary table.

Insert Table 1 About Here

The partial F-ratio for the effect of sex, controlled for educational level, number of dependents, and occupational rating, was significant (F = 4.73; p < .05); the effect due to job level was also significant (F = 10.85; p < .001) but the interaction proved nonsignificant. Of the covariates, only educational level showed a significant partial F-ratio (F = 5.78; p < .05). The absolute difference between the male and female nAch means, 97.65 (SD = 10.0) and 101.68

(SD = 9.3), respectively, was relatively small. However, the sex and job level effects acccunted for 16% and 23% of the variance, respectively.

The hypothesized relationship between nAch and childrearing was tested using a dictomous independent variable, based on a median split of scores from the independence/achievement scale, in an ANOVA of nAch scores for the total sample, males, and females. The analyses showed a significant effect ($F = 15.43$; $p < .001$) for the total sample, for females ($F = 5.50$; $p < .05$), and for males ($F = 10.80$; $p < .01$) with higher means in all cases for subjects having experienced more parental encouragement. The means for the total sample were 97.1 ($n = 123$; SD = 9.7) and 102.0 ($n = 102$; SD = 9.0). For females the means were 99.3 ($n = 66$; SD = 9.4) and 102.3 ($n = 50$; SD = 8.9). The means for males were 95.7 ($n = 57$; SD = 10.0) and 101.7 ($n = 52$; SD = 9.2). In none of the analyses was the explained variance due to this effect above 10%.

The approach to test the hypothesized relationship between socioeconomic status (SES) and nAch used, as the independent variable, a resulting classification based on summed and trichotomized responses to SES-related biographical items. For each of these variables, a series of ANOVA's of nAch were performed on data from the total sample, males, and females.

The F-ratios for the total group, males, and females were 5.26 ($p < .01$), 3.14 ($p < .05$) and 2.63 ($p < .08$), respectively. In each instance the mean nAch trend favored those groups designated as having higher SES. Post hoc analysis determined that the low SES group mean was significantly different from the remaining group means for the total sample and from only the high SES mean for males. In no instance did the effect account for more than 4% of the variance. The total sample high, middle, and low SES group means were 101.68 (SD = 7.8),

100.02 (SD = 10.1), and 94.83 (SD = 10.4), respectively, the same group means for males were 101.78 (SD = 7.4), 98.41 (SD = 11.0), and 94.11 (SD = 10.4). Finally, the female SES group means were 101.50 (SD = 8.7), 101.23 (SD = 9.2), and 95.59 (SD = 10.63).

The next hypothesis expected subjects raised in rural vs. urban settings to obtain higher nAch scores and females whose parents were divorced or separated to achieve higher nAch scores than females whose parents remained married. Two ANOVA's used nAch as a dependent variable and used separately, as dependent variables, the biographical items related to the marital status of the subjects' parents during childhood and the geographic regions in which the subjects lived as children. In neither analysis was support for the hypothesis found among the total sample, males, or females. That is, for all three samples there were no significant between-groups effects due to either parental marital status or due to geographic background.

The final hypothesis states that females whose family responsibilities are at a minimum will show higher nAch scores than those who have greater family responsibilities. There appeared some visual evidence of a curvilinear relationship between nAch and the family responsibility variable when they were plotted for females. Further, first, second, and third degree polynomial regression analyses using these variables showed the following multiple regression coefficients: .08, .34, and .35, respectively. The latter two coefficients were significant ($p < .05$) with the first representing a measure of linear relation. No similiar results were found for males.

Discussion

In order to test hypotheses dealing with the nAch construct, it was felt that a stronger measure be used to compensate for the poor psychometric support

often found in research dealing with nAch. Hermans' (1970) questionnaire approach was chosen so to offer the opportunity for statistical dissection. The reliability (.80) was certainly higher than what one normally finds reported by researchers employing projective measures (Entwisle, 1972). This evidence will probably not dissuade supporters of projective techniques because they may argue that the assessment of personality constructs demands a more subtle method, one which would not be expected to yield high reliabilities due to the fluid nature of the concept under examination. The nAch debate between "trait" versus "state" must await further legitudinal research.

The first hypothesis predicted that males would obtain higher nAch scores than females. This hypothesis received no support. Females had significantly higher nAch than males. However, the absolute difference between the male and female mean casts some doubt on the salience of this finding. It is possible that larger between-sex differences reported in the past (McClelland et al., 1953; Veroff et al., 1953) may have been a function of the type of measurement used or the domain from which most subjects were drawn, i.e., university students. The so-called "real" people, particularly adults in a working environment, may not have large nAch differences, as Baruch (1967) found.

The finding of effects due to job level tend to support what was found by Morrison and Sebald (1974). Their measure of nAch, based on the Edwards Personal Preference Schedule, showed differences favoring female executives over female nonexecutives. If one views job level as a behavioral correlate of nAch, it would be expected that those subjects in higher positions would obtain higher nAch scores. More levels of job classification may need to be included in further research. These results seem to contradict those reported by Miner (1975) indicating no consistent differences in managerial motivation between males and

females. The research by South (1974) was able to show differences in nAch between upper level male managers and male business students, but no significant difference between upper level and middle managers using Hermans' (1970) technique. This issue is difficult to resolve due to the lack of further evidence of validity for any of the nAch measures. What is needed is perhaps the most elusive object in this and other areas, a suitable criterion which contains a sufficiently wide spectrum of behaviors allowing the researcher to examine a continuum of nAch/job behavior relationships.

There was support for the hypothesis predicting relationships between childrearing practices and nAch. It appears that persons whose parents encourage independence/achievement do obtain higher nAch than those whose parents give less encouragement. This finding leads one to conclude that the relationship between this type of childrearing practice and nAch, as suggested by McClelland et al. (1953) and Stein and Bailey (1973), does exist among the males and females in the present study.

A hypothesis concerned with a more immediate description of the subject's surroundings, that which predicts a higher nAch score for persons belonging to higher SES classes, did receive support. It was shown that the SES group nAch means increased in relation to increased SES. The absolute difference between the low and middle SES group means was very small.

It was hypothesized that persons raised in a rural versus urban environment will have higher nAch scores. Also, females whose parents did not remain married during the subject's childhood were expected to have higher nAch scores than those females whose parents remained married. The results do not offer evidence to support his hypothesis.

There was not a significant between-groups effect for the total sample, males, or females due to geographic background. One could speculate that since the time Veroff et al. (1960) gathered data contrasting geographic background, the mobility from rural to urban areas has increased and the influx of urban ideas via various new media may have served to vitiate such effects.

The effects of the parents' marital status during the subjects' childhood was negligible in terms of nAch. This may indicate that nAch for working people is not significantly affected by events at an earlier age. This result may provide evidence that some early family-oriented influences can be modified by the demands put on people as they become older, pass through various socializations processes away from the home, and are required to take on responsibilities more strongly related to the goals of groups no longer under familial jurisdiction.

The final hypothesis suggested that the relationship between a person's family responsibility, defined by the subject's age and the number and age of present dependents in the home, is nonlinear. Specifically, some researchers (Matthews, 1960; Degler, 1967; Baruch, 1967) are inclined to believe that women who have less family responsibility will also have more nAch than females with greater family responsibility. If family responsibility causes a suppression of nAch as Hall (1975) suggests, the female low responsibility groups would be expected to have higher nAch scores than the high responsibility group. This was found to be the case. The present findings show curvilinear trends among the females. Although family responsibility, as defined here, does appear to be related to nAch, another possible factor which could affect this relationship might be the financial pressures a person feels when deciding what job to take, or whether it is necessary to work at all. This idea was suggested by Fuchs (1971) who added that the stereotypic dichotomy of career women versus housewives

obscures a far more complex issue. It was found, for example, that women who enjoyed their jobs also enjoyed their housekeeping roles. Thus, it may be that other aspects of family responsibility are related to nAch. For example, the attitudes on the part of the spouse or other family members may play an integral part in a women's judgment regarding the optimal solution to satisfying nAch. Ethnic or religious background could be factors surrounding the standards by which achievement is measured. The present sample shows support for such responsibility as it related to dependents. With the prospects of having facilities available to care for children of working mothers, pressures stemming from family responsibilites involving childcare may have less future impact.

It is not known if the present group of employees represent the views of workers in wider areas of employment or if the measures taken would have remained invariant over time. To examine these issues, future research will have to be conducted across a larger number of different organizations and/or be carried out with a longitudinal approach. Current literature suggests that other variables deserve investigation in relation to the concept of nach. Specifically, it is suggested that the relative impact of sex-role stereotyping as well as more overt forms of discrimination on the basis of sex in the work setting be assessed since both internal and external barriers may influence a person's assessment of what constitutes realistic achievement expectations on the job.

Footnotes

Requests for reprints should be sent to: Gary D. Kissler, Navy Personnel Research and Development Center (Code 302), San Diego, California 92152. The opinions and assertions contained in this paper are those of the writer and are not to be construed as official or reflecting the views of the Navy Department.

[1]A complete set of measures for this study may be obtained by contacting the author.

[2]Although not reported here, it was found that the type of housing for males was the best predictor of nAch; for females the best predictors were educational level and the educational level of each parent.

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Table 1

Three-Way Analysis of Covariance for the Effects of Sex and Job Level Upon nAch, Controlling for Educational Level, Number of Dependents, and Occupation

Source	SS	df	MS	F
Education	503.59	1	503.59	5.78*
Dependents	52.10	1	52.10	.60
Occupation	26.25	1	26.25	.30
Sex(S)	412.41	1	412.41	4.73*
Job(J)	944.12	1	944.13	10.85**
S X J	64.65	1	64.65	.74
Residual	18385.61	211	87.14	
Total	20747.60	217		

*$p < .05$

**$p < .001$